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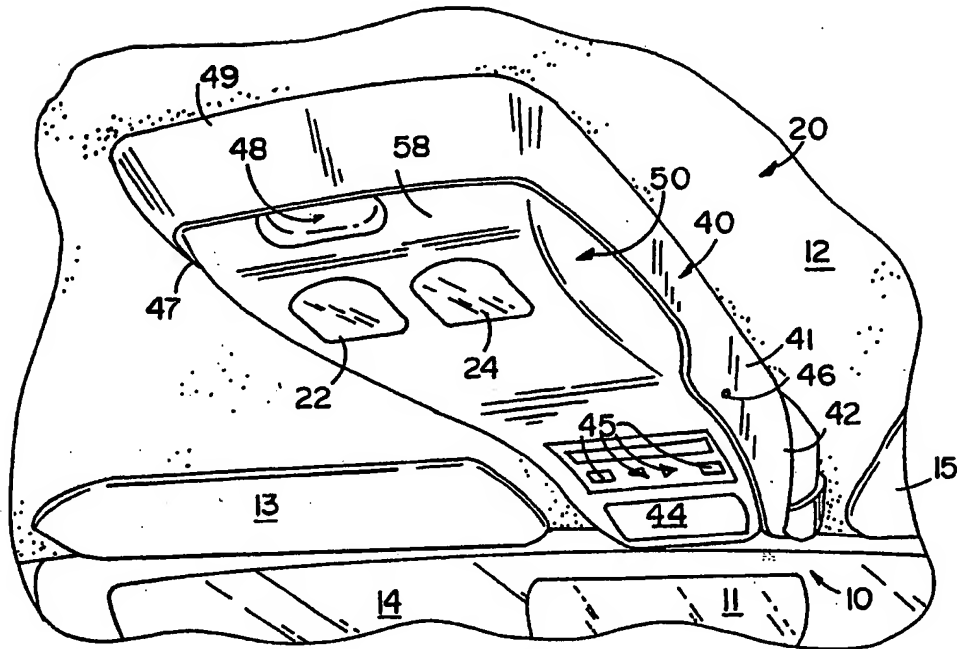


FIG. 1

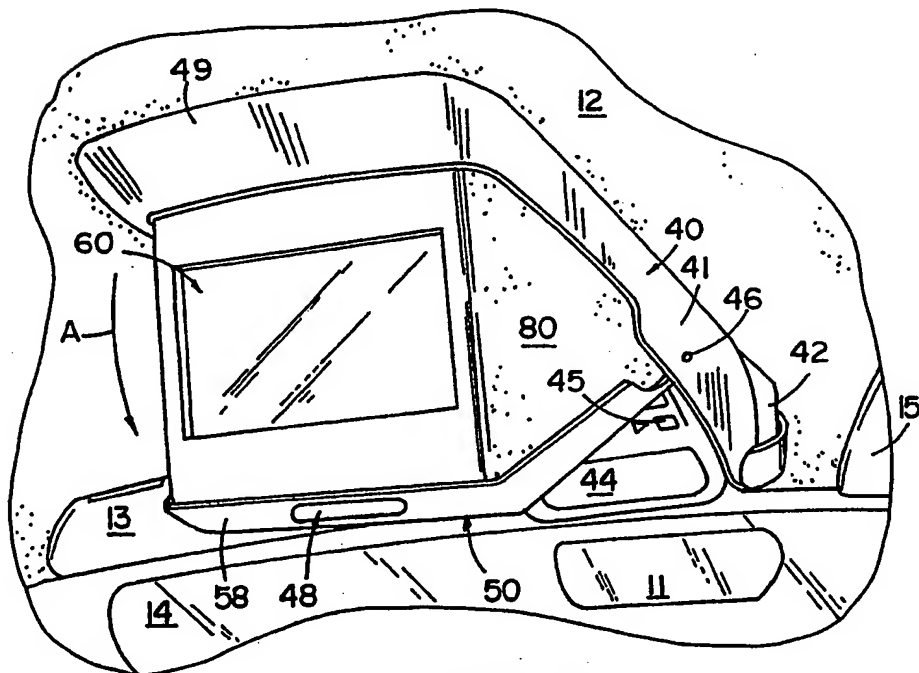
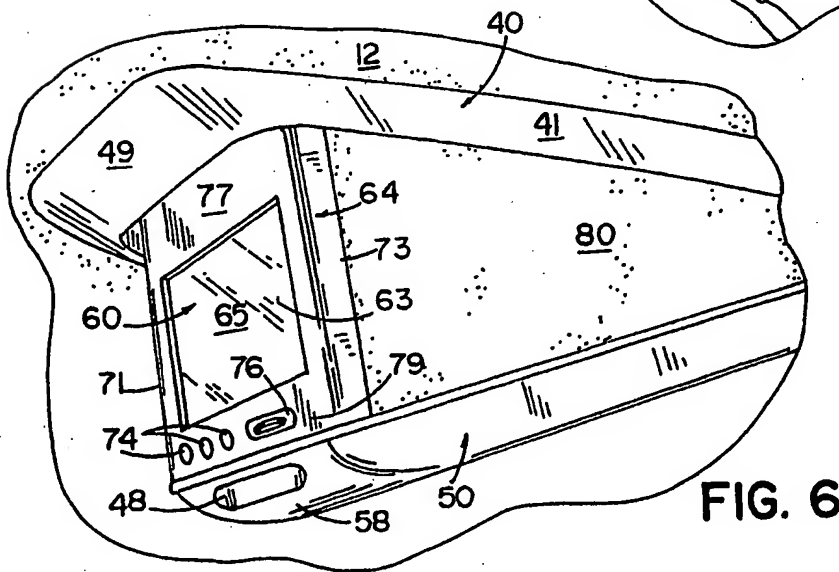
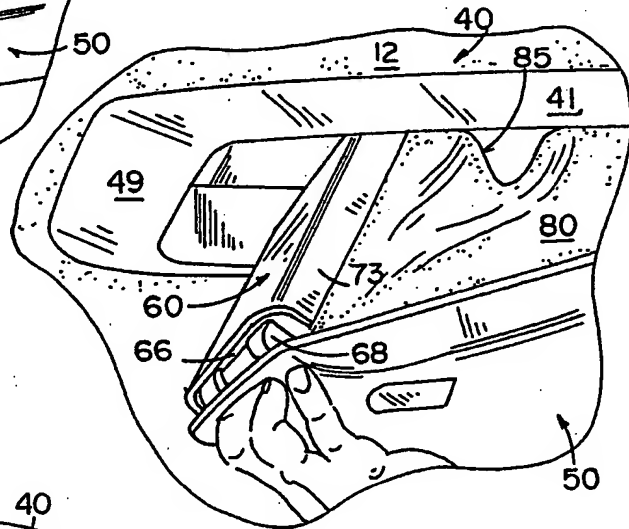
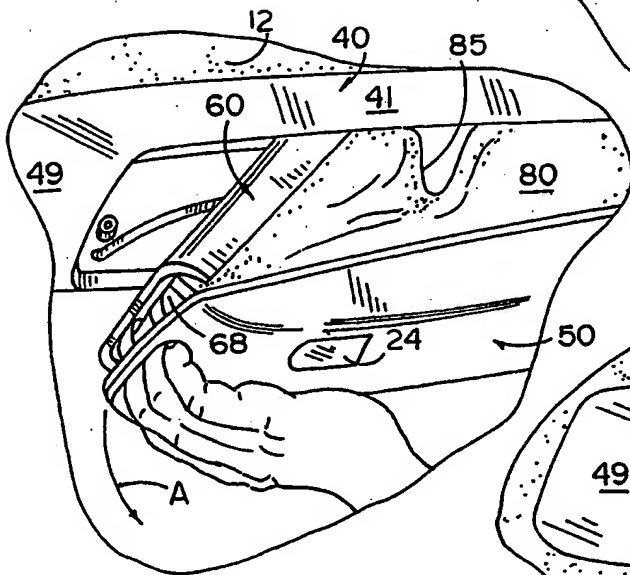
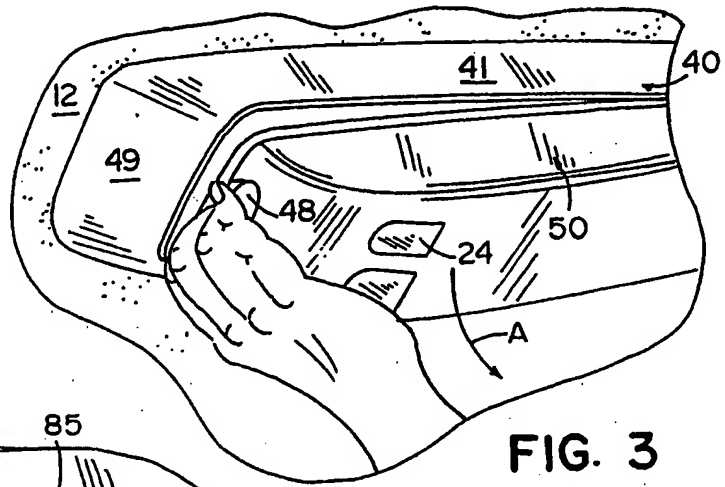


FIG. 2



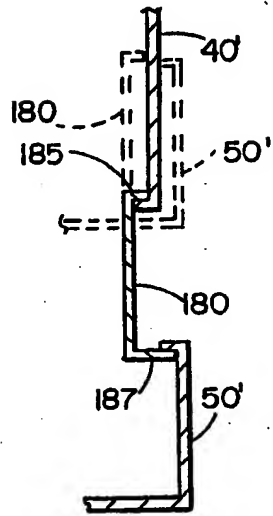


FIG. 12

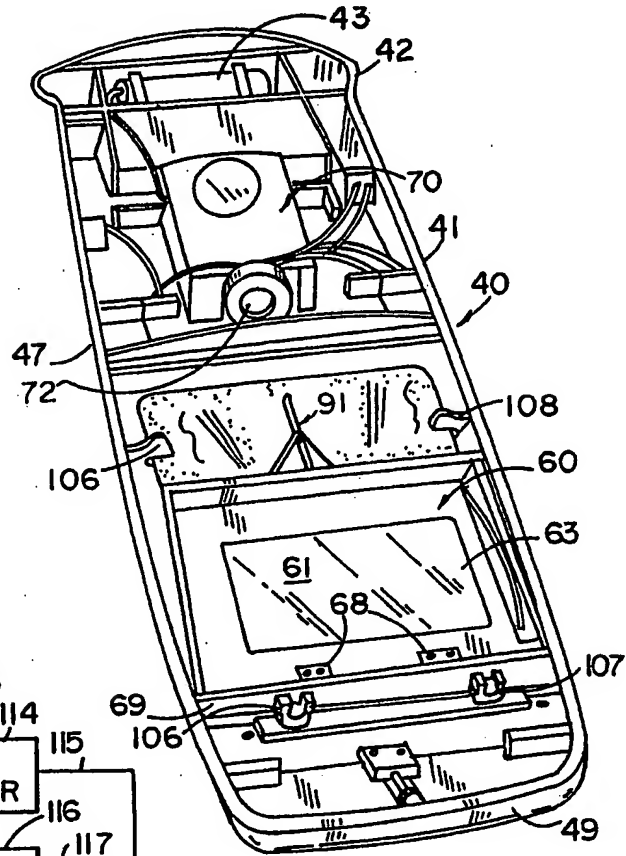


FIG. 7

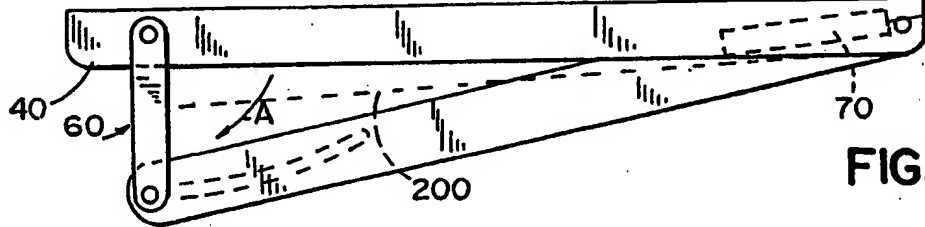
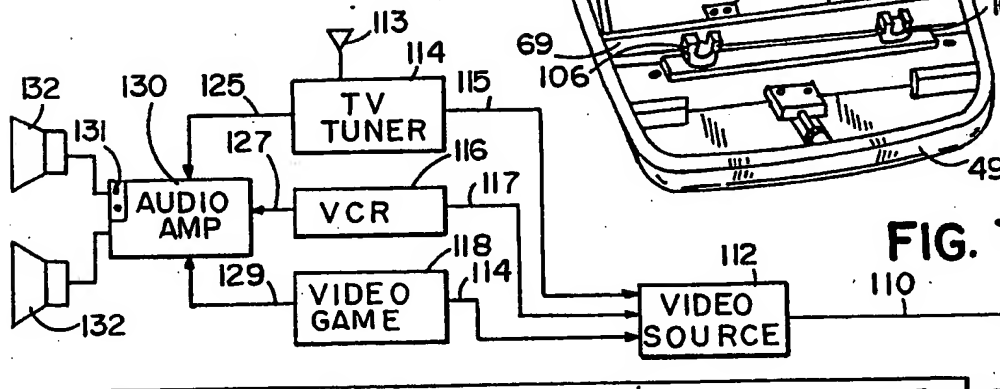


FIG. 13

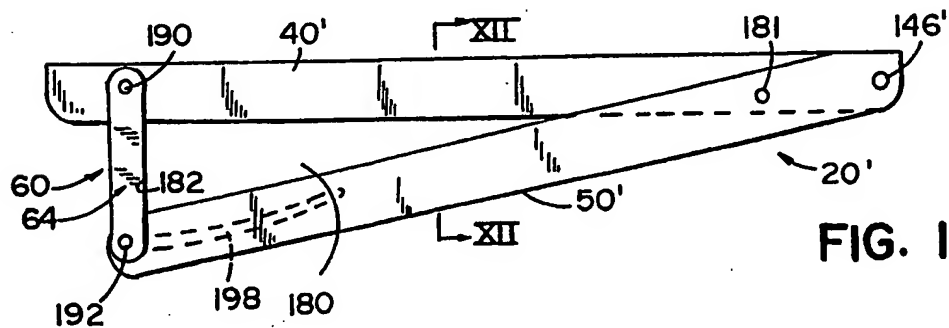
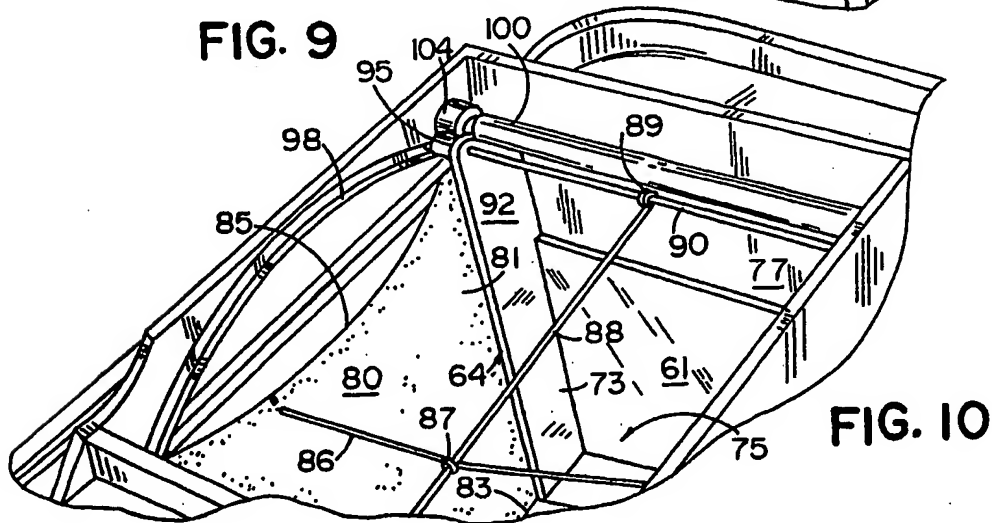
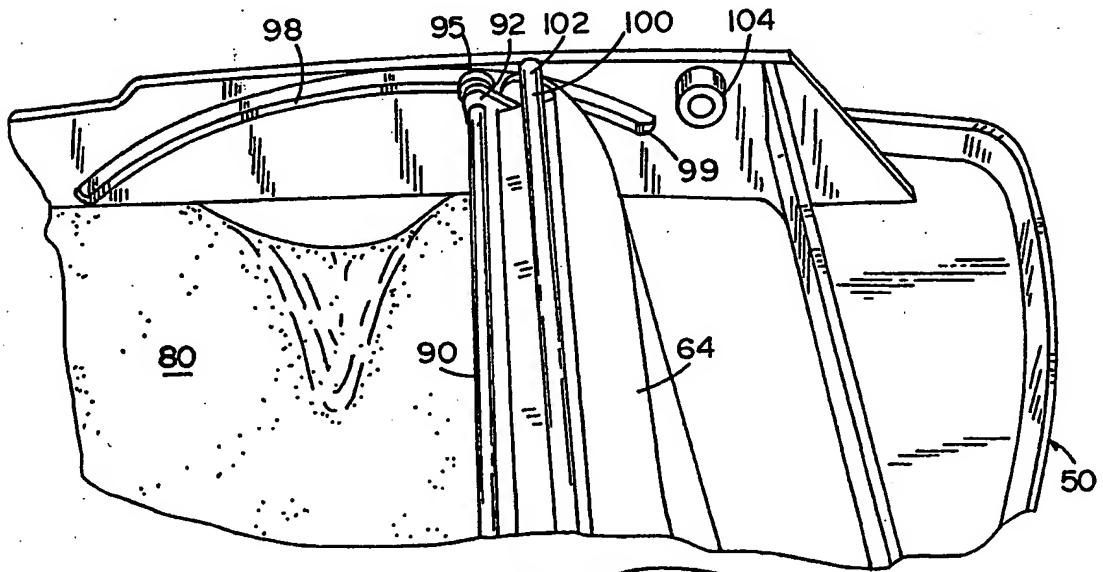
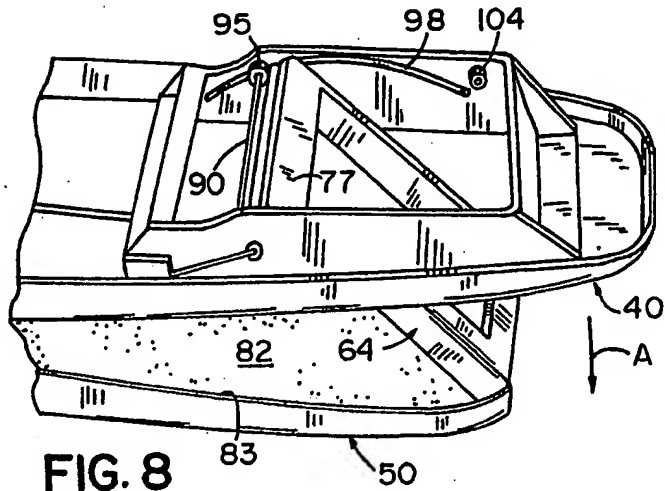


FIG. 11



- 1 -

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1                   PROJECTED DISPLAY SYSTEM FOR A VEHICLE

BACKGROUND OF THE INVENTION

                  The present invention relates to a vehicle  
television display and particularly to an overhead mounted  
5                   projection system for displaying video television format  
information within a vehicle.

                  There have been several systems available for use  
in connection with limousines, mini-vans, van conversions  
and motor homes which provide small screen conventional  
10                  televisions within a vehicle overhead console for use by  
rear seat passengers for either watching television  
broadcast signals or for watching a video tape through a VCR  
connected to the television. More recent installations have  
included relatively small and expensive color LCD flat  
15                  screen displays which can be pivoted down from a raised  
horizontal stored position within a vehicle overhead console  
to a lowered, generally vertically extending, use position.

                  The disadvantage of such an LCD direct display is  
that it is very expensive and is limited to a relatively  
20                  small picture display which cannot be easily viewed by rear  
seat passengers. Larger sized LCD video displays are not  
currently commercially available and prototype models are  
extremely expensive. Conventional CRT display tubes of  
significant size are too large for storage in the overhead  
25                  of smaller vehicles such as conventional automobiles even  
though relatively small CRT's have been used in, for  
example, limousines, motor homes and vans. As a result,  
economical larger screen television displays have not been  
generally available for vehicles such as automobiles.

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1           The console further includes, in a preferred  
embodiment, light blocking means coupled between the cover  
and housing for enclosing the sides of the space between the  
projector and screen for providing a dark environment  
5       between the projector and the surface of the screen facing  
the projector. In one embodiment of the present invention,  
the enclosing means are pivoted panels, and in another  
embodiment comprise flexible fabric. Both systems collapse  
to a stored position within the housing when the cover is  
10       moved to the closed position.

These and other features, objects and advantages  
of the present invention will best be understood by  
reference to the following description thereof together with  
the accompanying drawings in which:

15           BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a fragmentary perspective view of a  
vehicle including a projection system embodying the present  
invention shown in a stored position;

20           Fig. 2 is a fragmentary perspective view of the  
system of Fig. 1 shown in a use position;

Fig. 3 is a fragmentary perspective view showing  
the unlatching of the cover for the lowering of the  
projection system from the stored position shown in Fig. 1  
to the use position shown in Fig. 2;

25           Fig. 4 is a fragmentary perspective view showing  
the movement of the projection screen from the stored  
position toward the use position;

Fig. 5 is a fragmentary perspective view showing  
the progressive movement of the projection screen from the  
stored position toward the use position;

30

1                    Fig. 6 is a perspective view of the projection  
screen and light blocking structure shown in the use  
position;

5                    Fig. 7 is a top perspective view of the console  
shown removed from the vehicle and including the projector  
and movable screen of the present invention;

10                   Fig. 8 is an enlarged, fragmentary, top  
perspective view of the screen mounting mechanism shown also  
in Figs. 4, 5, and 7 shown with the screen in a partly  
extended position;

15                   Fig. 9 is an enlarged, fragmentary, perspective  
view of the screen and mounting structure shown in a nearly  
fully extended use position;

20                   Fig. 10 is an enlarged, fragmentary, rear facing,  
top perspective view showing the inside of the console with  
the screen in its fully extended use position;

25                   Fig. 11 is a side elevational view of an  
alternative embodiment of the projection system of the  
present invention shown in a use position;

30                   Fig. 12 is an enlarged cross-sectional view of one  
side of the structure shown in Fig. 11 taken along section  
line XII-XII of Fig. 11; and

35                   Fig. 13 is a schematic and block diagram view of  
the electrical and projection system of the present  
invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to Fig. 1, there is shown a  
vehicle 10 such as an automobile and particularly the  
overhead or roof area 12 of the vehicle looking toward the  
front windshield 14 from the rear seat area. The vehicle  
may include a rear view mirror 11 mounted in the central

1 upper area of the windshield and a pair of visors 13 and 15  
mounted to the roof 12 on the driver and passenger sides  
respectively.

5 Mounted to the roof of the vehicle and between the  
visors is a console 20 embodying the present invention. The  
console 20 is an elongated, generally rectangular structure  
mounted with its longitudinal axis extending along the  
center line of the vehicle as shown. The console includes a  
housing 40 to which there is pivotally mounted a cover 50  
10 which can be selectively lowered as seen in Fig. 2 to expose  
a rear facing projection screen 60 for a television video  
projector 70 (Fig. 7) which is mounted within the housing 40  
near the forward end 42 thereof. The housing 40 can be  
mounted to the roof of the vehicle using a plurality of  
15 spaced conventional fasteners such as shown at 106 and 108  
in Fig. 7.

Mounted in the forward end 42 of housing 40 may be a  
variety of vehicle options such as a digital, alphanumeric  
display 44 for an electrical compass 43 (Fig. 7) and  
20 suitable control switches 45 for providing compass display  
information on the LCD or vacuum fluorescent display 44.  
Display 44 may also be employed to display temperature or  
other vehicle operating parameter information. For such  
purpose, the console 20 is mounted to the vehicle with  
25 display 44 near the windshield 14 and readily visible to the  
driver while the projection screen 60, for the  
television-type (i.e. raster) display is visible only to the  
rear seat passengers. A compass system suitable for  
mounting within the console 20 and housing 40 thereof is  
30 disclosed in U.S. Patent No. 4,953,305 issued on September

1 4, 1990 and entitled VEHICLE COMPASS WITH AUTOMATIC  
CONTINUOUS CALIBRATION and assigned to the present assignee.

5 Cover 50 is pivotally mounted between side walls  
41 and 47 of the housing 40 by means of pivot pins 46 with a  
conventional latch assembly 48 mounted to the rear edge 58  
of cover 50 and engaging a catch mounted to the inner edge  
of rear wall 49 of housing 44, releasing the cover from its  
raised, latched and stored position shown in Fig. 1 to allow  
its downward movement in a direction indicated by arrow A in  
10 Figs. 2-5 for use of the projector.

15 The console 20 may also include a pair of courtesy  
lights 22 and 24 mounted to the cover 50 near its rear edge  
58 such that when the cover is closed in a raised stored  
position, as shown in Fig. 1, the console with the courtesy  
lights 22 and 24 coupled to the vehicle's electrical system  
conveniently provides overhead courtesy lights from the  
console 20.

20 As cover 50 is unlatched from housing 40 and  
lowered progressively, as illustrated in Figs. 3-6, means  
coupling the projection screen 60 between the housing and  
cover allow the screen assembly 60 to be moved from a  
substantially horizontal stored position as seen in Fig. 7  
within the housing, to a substantially vertical use position  
shown in Figs. 2, 6, and 10. Before describing the means  
25 for mounting the screen between the cover and housing to  
achieve this function, it is briefly noted that in the first  
embodiment shown in Figs. 3-6, the screen assembly 60 is  
pivotally mounted at its lower edge to the rear edge 58 of  
cover 50 and is controllably guided by slot means in the  
inner walls of the sides of housing 40 such that lowering of  
30 the cover urges the screen from its horizontal position to

1 its vertical use position. In the Figs. 11 and 12  
embodiment, this mounting arrangement is reversed as  
described below.

5 In the lowered use position shown in Figs. 2, 6,  
and 10, projected light 200 (Fig. 13) from lens 72 of the  
video projector 70 (Fig. 7) is transmitted through an  
enclosed darkened cavity 75 (Fig. 10) of the console for  
projecting a television image directly onto the rear surface  
61 of the projection screen 63. The cavity is enclosed from  
10 incident ambient light by side panel means 80 and 82 on each  
of the sides, such that light from the projector 70 will  
provide a bright image to the user on the projection screen  
63. Having briefly described the overall concept of  
applicant's invention, a more detailed description,  
15 particularly of the mounting of the screen assembly between  
the cover and housing is presented in connection with Figs.  
4-10.

Referring initially to Fig. 6, it is seen that the  
screen assembly 60 includes a generally molded polymeric  
20 frame 64 with vertically extending sides 71 and 73, a top  
edge 77 and a bottom edge 79 into which a translucent  
rectangular screen 63 is mounted. Screen 63 has a rear  
surface 61 which may have a suitably textured surface, such  
as a lenticular pattern or by being sandblasted, for  
25 providing a bright, clear image to the viewer of the  
opposite or front surface 65 of screen 63. The frame 64 may  
include controls for the video projector 70 such as power on  
and off and other control switches 74 and a contrast control  
knob 76 which are mounted to the lower edge 79 of frame 64  
30 and coupled electrically to the projector 70 by conventional  
electrical conductors (not shown).

1           The lower edge 79 of frame 64 includes a pair of  
spaced pivot hinges 68, which pivotally couples the frame  
and screen 63 therein, to an inner transversely extending  
support wall 69 extending between the sides 41 and 47 of  
5   housing 40 as best seen in Fig. 7. This allows the screen  
assembly 60 to pivot from the horizontal stored position  
shown in Fig. 7 to a raised, generally vertically extending  
position, as seen in Figs. 2 and 6.

          Mounted to the top of frame 64 between sides 71  
10   and 73 is a transversely extending guide rod 90 (Figs. 8-10)  
which extends between upper forwardly located extensions 92  
of the sides of frame 64. Rod 90 extends through apertures  
in extensions 92 on each side of the frame 64 and includes  
guide rollers 95 at its ends. Rollers 95 fit within arcuate  
15   slots 98 formed on the inside of walls 41 and 47 of the  
housing 40 such that, as the cover 50 is lowered in a  
direction indicated by arrow A in the Figs., the upper edge  
77 of the screen assembly 60 is drawn rearwardly by the  
guide rollers 95 extending in the arcuate tracks 98 on each  
20   side, to stabilize and control the motion of the screen  
assembly as it moves into a generally vertical position as  
the lower edge 79 pivots on hinges 68.

          Extending along the top 77 of frame 64 in parallel  
spaced relationship to guide rod 90 is a locking bar 100  
25   having ends 102, which ride over a compressible circular  
stop 104 mounted to the inside surface of each of the side  
walls 41 and 47 of housing in an over-center snap locking  
relationship for releasably holding the screen assembly in a  
lowered use position once the cover has been fully opened,  
30   and yet allowing the cover to be closed by urging the rear  
end 58 upwardly in a direction opposite arrow A in the

1       Figures. For such purpose, rod 100 is spaced from rod 90 a  
distance such that ends 102 will ride on a side of the  
circular rubber stop member 104 opposite the stop-forming  
ends 99 of tracks 98 with the guide member 95 substantially  
5       butting the end 99 of the guide track, as seen in Fig. 10.

Coupled to the sides 71 and 73 of frame 64 in the  
embodiment shown in Figs. 1-10 are flexible generally  
triangular black light opaque fabric panels 80 and 82 which  
are collapsed, as best seen in Figs. 4 and 5, when the  
10       screen is in a stored position but which unfold to fill in  
the triangular sides of the projection system when fully  
opened. The flexible fabric panels 80 and 82 effectively  
block ambient light from entering the cavity 75 to provide a  
bright image to the viewer. Each of the panels 80 and 82  
15       include a forward edge 81 (Fig. 10) which is attached to the  
sides 71 and 73 of the projection screen frame 64 on a  
continuous line extending the height of the frame. The  
flexible fabric similarly is coupled at its lower edges 83  
to the upper inner edges of cover 50 as also seen in Figs. 8  
20       and 10. The upper edges 85 of flexible panels 80 and 82,  
however, include a welt not attached to the housing 40 to  
allow the fabric to collapse within the housing and cover  
with the pivoting closing movement of the projection screen  
assembly 60. The flexible material unfolds to fill in the  
25       sides as best seen in Figs. 4 and 5, when the screen is  
lowered for use.

In order to ensure that the fabric sides 80 and 82  
fully raise and enclose the interior projecting space within  
the housing between the projector and screen, a flexible  
30       wire 86 (Fig. 10) extends between the top edges 85 of fabric  
panels 80 and 82 approximately at the midway position of the

1 longitudinal axis of the projection housing. Wire 86  
includes a loop 87 surrounding a flexible control cord 88  
which is anchored at its rearward end 89 to the center of  
rod 90 as seen in Fig. 10, and at its forward end 89' to the  
5 housing as seen in Fig. 7. When the screen 60 is in an  
extended position, cord 88 becomes taut thereby raising wire  
86 to a horizontal position at the top of the projection  
area within the housing and cover near the lower edge of the  
housing and above the projected image area of the system.  
10 This assures the flexible fabric side panels 80 and 82 are  
fully raised and prevent light from leaking within the  
interior space of the projection area. In some embodiments,  
such as the preferred embodiment shown in Figs. 11 and 12  
one or more pivoted, rigid, side panels are employed making  
15 this additional structure unnecessary.

The projector 70 is a relatively compact flat  
rectangular projector which projects through a small  
selective multi-color light transmitting LCD chip modulated  
with NTSC video signals and using a high intensity light  
20 source. The projector in the preferred embodiment is a  
model P-40U projector commercially available from Fujix, and  
integrally includes the electrical circuitry for processing  
NTSC signals and modulating the LCD chip. The projector  
includes a lens 72 (Fig. 7) for the rear projection of the  
25 television image onto a screen, such as the screen 63 of the  
present invention. The focal length of the projection lens  
can be adjusted and depending on the length of the housing  
for console 20, the screen 60 can take on a variety of  
sizes. In the compact system shown in the Figs. of the  
30 present invention, the screen size was 6 inches along the  
diagonal although this represents approximately the smallest



1 size available with this particular projector. By  
elongating the housing somewhat and/or moving the projector  
forwardly and eliminating the electrical compass display,  
larger screens can be provided. Naturally, for larger  
5 vehicles such as vans and motor homes, the screen size can  
be increased significantly without additional significant  
expense. In such modifications it will be apparent that the  
rear end of the console would be enlarged to accommodate the  
larger screen size. The projector 70 can be modified by  
10 eliminating the audio components of the commercially  
available projector and utilizing the vehicle's own audio  
system, as seen in the block and schematic diagram of Fig.  
13 as described below.

Referring now to Figs. 11 and 12, there is shown  
15 an alternative and preferred embodiment of the invention in  
which the flexible sides 80 and 82 are replaced with a  
housing 40' which is somewhat vertically deeper than the  
housing 40 of the previous embodiment and a cover 50' which  
likewise is somewhat deeper than cover 50 of the previous  
20 embodiment. In order to block light from the triangular  
areas between the lower edge of housing 40' and the upper  
edge of cover 50', at least one thin, triangular panel 180  
(on opposite sides of the console) is provided. Each of the  
panels 180 are pivotally coupled by a pivot connection 181  
25 to the housing 40' near the forward end thereof and in  
spaced relationship to the pivot connection 146' of cover  
50' to housing 40'. As the cover 50' is moved to a lowered  
use position the thin panels 180 on each side of the console  
extend from their overlapping compact relationship within  
30 the console 20'. As best seen in the vertical, cross-  
sectional view of Fig. 12, the side panel 180 is nested

1 within the housing 40' and cover 50' and includes  
interengaging upper and lower outwardly extending lips 185  
and 187 respectively, which engage inwardly extending ledges  
in the cover 50' and housing 40' in the extended position.  
5 The front edge 182 of the panels may be slidably mounted to  
a vertically extending groove formed in the forward facing  
side walls of the frame 64 of projection screen 60 to  
maintain the alignment of the side panels 180 with respect  
to the screen as the panels pivot between the compact stored  
10 position and the lowered use position.

The side panels 180 may include a single panel in  
some embodiments or overlapping leaf-type multiple panels  
slidably interconnected in a conventional manner for larger  
sized projection screens with a larger triangular side area  
15 which must be blocked against incident light for use of the  
projection system during daylight hours. In the embodiment  
shown in Figs. 11 and 12, the screen frame 64 is pivotally  
mounted by spaced hinges 190 at its upper end to the housing  
40' and a guide rod 192 at its lower edge has ends which  
20 extend within an arcuate slot 198 on the inside of cover 50'  
in reverse relationship to the structure shown in the  
embodiments in Figs. 4-10, such that the screen pivots from  
the top and pivots and slides at the bottom as opposed to  
pivoting at the bottom and sliding at the top, as in the  
25 previous embodiment. The embodiment shown in Figs. 11 and  
12 allow the use of a relatively larger screen which does  
not project downwardly from the lower edge of the housing  
40' as far as the system shown in the earlier embodiment.  
In the event of an impact force at the lower corner of the  
30 projection screen, this embodiment will collapse more  
readily for safety purposes.

1           Cover 50' may include a latch similar to the latch  
used in the earlier embodiment for holding the cover closed  
in a stored position when not in use, thus having a  
substantially identical appearance as shown in Fig. 1. The  
5           embodiment shown in Figs. 11 and 12 thus reverses the  
mounting of the screen providing the pivoted mounting of the  
screen at its upper end to the housing while the lower end  
rides within the track of the cover such that the screen  
pivots forwardly and upwardly from its lower end as it is  
10          moved to a stored position.

          Referring now to Fig. 13, it is seen that the  
projector 70 receives NTSC video signals from a desired  
source and projects these signals onto the rear projection  
screen. The screen 60 shown in the schematic diagram of  
15          Fig. 13 pivots downwardly, as in the embodiment shown in  
Figs. 11 and 12, from the housing. Projector 70 is mounted  
at a suitable angle in the housing such that its lens 72  
focuses on the screen. Light is projected along a pathway  
200, shown in dotted lines in Fig. 13, in a darkened  
20          environment provided by the sides 80 and 82 in the  
embodiment shown in Figs. 3-6 or the shutter-type side  
panels 180 described in connection with Figs. 11 and 12.

          The NTSC signals provided to projector 70 and  
supplied by a video cable 110 which can be trained  
25          underneath the vehicle headliner and coupled to the output  
of a video source selector switch 112. In the embodiment  
shown, switch 112 is a three position switch with three  
inputs for coupling any one of the inputs to output cable  
110. One of the inputs to switch 112 is provided by  
30          conductor 115 coupled to the output of a TV tuner 114  
coupled to a television receiving antenna 113. A second

1 switch input is coupled by conductor 117 to the video output  
of a compact VCR 116. The video output from a video game  
118 is coupled to the third input of switch 112 by conductor  
119. The audio outputs from each of these sources 114, 116,  
5 and 118 can be conventionally coupled to the speaker system  
existent in the vehicle or to a separate audio system for  
rear seat use only. Thus, the audio outputs 125, 127, and  
129 of the sources 114, 116, 118 may be coupled to an audio  
10 amplifier 130 which is coupled to the vehicle's speaker  
system or its own speaker system as represented  
schematically by the speakers 132 in Fig. 13.

Alternatively, the audio amplifier 130 includes  
headphone jacks 131 such that headphones (not shown) can be  
employed to listen to the audio portion of the entertainment  
15 provided by the television projection system of the present  
invention so as not to distract the vehicle driver. Each of  
the components 114, 116, 118, and 130 can be mounted within  
a floor console at the center of the vehicle rear seat area  
for convenient use by either of the rear seat passengers, in  
20 one of the side doors of the vehicle, or at another suitable  
location. The television tuner 114 and VCR 116 may be an  
integral unit having its own infrared remote control to  
allow even more convenient use by the passengers.

With the system of the present invention  
25 therefore, the rear seat passengers are provided with a  
television viewing system which allows entertainment of the  
rear seat passengers, such as children, during long trips  
without distracting the vehicle operator and providing them  
with a relatively large screen television which is easily  
30 viewable. The utilization of a projection system which is  
now commercially available at relatively low cost, as

1 compared to direct view LCD panels, economically provides a  
relatively large screen display. The movable mounting of  
the screen provides a safe system for use in vehicles and  
one which can be readily stored when not in use so as to be  
5 used as a normal overhead console, and prevent any  
distraction whatsoever to the vehicle operator.

It will become apparent to those skilled in the  
art that various modifications to the preferred embodiments  
of the invention described herein can be made without  
10 departing from the spirit or scope thereof as defined by the  
appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

-1-

1 A system for the projected display of television signals in a vehicle overhead console comprising:

a housing for mounting to the roof of a vehicle, said housing including a television signal projector mounted  
5 therein to project a television image rearwardly with respect to the vehicle;

a cover mounted to said housing for movement between a closed position and an open position for use of said projector; and

10 a projection screen and means for movably mounting said screen to said housing for movement between a substantially horizontal stored position when said cover is closed and a substantially vertical position for use when said cover is open, for use of said projector.

-2-

1 The system as defined in claim 1 wherein said cover is pivotally mounted to said housing near a forward end of said housing.

-3-

1 The system as defined in claim 2 wherein said means for movably mounting said screen to said housing comprises pivot means coupling an upper edge of said screen to said housing.

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1 The system as defined in claim 3 wherein said means for movably mounting said screen to said housing

5 further includes pin means extending from a lower edge of  
said screen and wherein said cover includes slot means into  
which said pin means extends for guiding said lower end of  
said screen to urge said screen to a raised position as said  
cover is moved from an open position to a closed position  
and for urging said screen to a lowered position as said  
cover is moved from a closed position to an open position.

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1 The system as defined in claim 2 wherein said  
means for movably mounting said screen to said housing  
comprises pivot means coupling a lower edge of said screen  
to said cover near a rear end of said cover.

-6-

1 The system as defined in claim 5 wherein said  
means for movably mounting said screen to said housing  
further includes pin means extending from an upper edge of  
said screen and wherein said housing includes slot means  
5 into which said pin means extends for guiding said upper end  
of said screen to urge said upper end of said screen to a  
forward position as said cover is moved from an open  
position to a closed position and for urging said upper end  
of said screen to a rearward position as said cover is moved  
10 from a closed position to an open position.

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1 The system as defined in claim 1 and further  
including sidewall means extending between said cover and  
said housing for blocking ambient light when said cover is  
in an open position.

-8-

1 The system as defined in claim 7 wherein said  
sidewall means comprises rigid panel means and means for

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movably mounting said rigid panel means between said housing  
and said cover for extending said panel means to fill in the  
5 gap between said housing and cover when said cover is  
opened.

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1 The system as defined in claim 7 wherein said  
sidewall means comprises flexible panels mounted between  
said cover and housing for collapsing when said cover is  
closed and extending when said cover is opened to fill in  
5 the gap between said housing and cover when said cover is  
opened.

-10-

1 An overhead console for the projected display of  
television signals in a vehicle, said console comprising:  
an elongated housing having a forward end for  
mounting to the front of a vehicle roof area of a vehicle  
5 and extending rearwardly, said housing including a  
television signal projector mounted therein to project a  
television image rearwardly with respect to the vehicle;  
a cover pivotally mounted near the forward end of  
said housing for movement between a closed position and an  
10 open position for use of said projector; and  
a projection screen and means for movably mounting  
said screen to said housing and said cover for movement  
between a substantially horizontal stored position when said  
cover is closed and a substantially vertical position  
15 aligned with said projector when said cover is open for use  
of said projector.

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1 The system as defined in claim 10 wherein said  
screen is pivotally mounted at one of a top and bottom edge

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to one of said housing and cover and slideably mounted at  
the other of said top and bottom edge to the other of said  
5 housing and cover.

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1 The system as defined in claim 11 and further  
including sidewall means movably coupled to said cover for  
covering the gap between said cover and said screen and said  
housing when said cover is in an open position to block  
5 ambient light from impinging on said screen on a side toward  
said projector.

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1 The system as defined in claim 12 and further  
including a source of video signals to be displayed by said  
screen, said source coupled to said projector.

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1 The system as defined in claim 13 wherein said  
video source comprises a television tuner.

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1 The system as defined in claim 13 wherein said  
video source comprises a VCR.

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1 The system as defined in claim 13 wherein said  
video source comprises a video game.

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1 A projection system for the display of television  
signals in a vehicle, said system comprising:

a console including an elongated housing and a  
cover for said housing, said housing adapted to be mounted  
5 to the roof of a vehicle;

a television signal projector mounted in said  
housing to project a television image along the longitudinal

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axis of said housing;

10 means for pivotally mounting said cover to said housing for movement between a closed position and an open position for use of said projector; and

15 a projection screen and means for movably mounting said screen to said housing for movement between a substantially horizontal stored position when said cover is closed and a substantially vertical position aligned with said projector when said cover is open for use of said projector.

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1 The system as defined in claim 17 wherein said means for movably mounting said screen to said housing comprises means for pivotally mounting said screen to said housing.

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1 The system as defined in claim 18 wherein an edge of said screen opposite the pivot mounting of said screen to said housing is coupled to said cover for guided movement of said screen as said cover is moved.

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1 The system as defined in claim 19 and further including side panels movably coupled to said housing to fill in the sides from said screen toward said projector when said cover is pivoted to an open position.

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1 The system as defined in claim 17 and further including flexible side panels movably coupled to said housing to fill in the sides from said screen toward said projector when said cover is pivoted to an open position,

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5 and means coupled to said screen and to said flexible side panels for extending said side panels when said screen is moved to a use position.

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1 A system for the projected display of television signals in a vehicle comprising:

a housing for mounting to the roof of a vehicle,  
said housing defining a light tight enclosure including a  
5 television signal projector mounted therein to project a television image rearwardly with respect to the vehicle; and

a projection screen mounted to said housing in spaced relationship opposite said projector for display of projected television images.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(ie Search report)**

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**Relevant Technical Fields**

- (i) UK Cl (Ed.M) H4F (FAAX, FCW, FJH)  
 (ii) Int Cl (Ed.5) B60R (11/02); H04N (5/74)

Search Examiner  
 M K REES

Date of completion of Search  
 22 JUNE 1994

**Databases (see below)**

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-  
 22

- (ii) ONLINE DATABASE: WPI

**Categories of documents**

- X:** Document indicating lack of novelty or of inventive step.      **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.      **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art.      **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
A	EP 0131988 A1 (PHILIPS) See Figure 1	22
X	FR 2544675 A (G AGAR ET AL) See whole document and WPI abstract	22
A	US 5146365 (CANON) See Figure 5; column 3, line 5 to line 40	22

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).